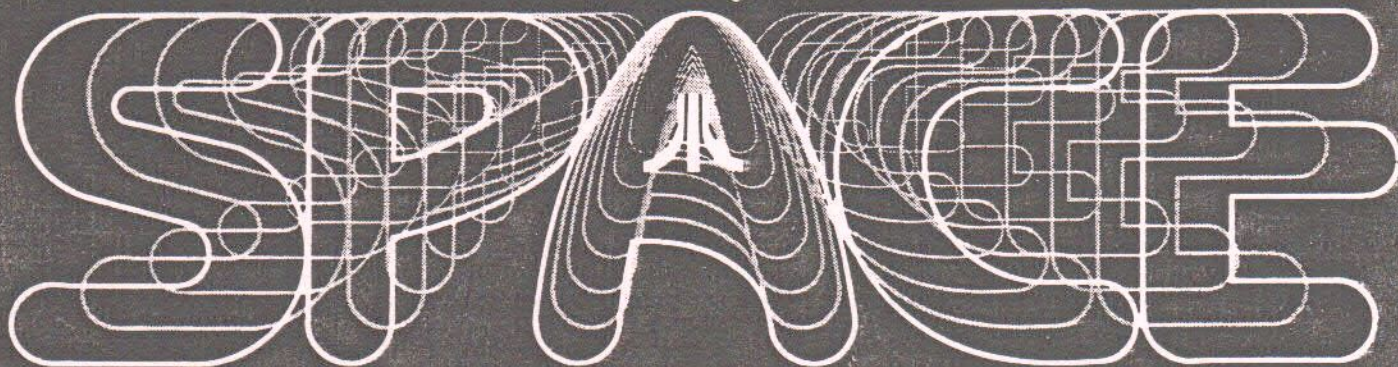


Saint Paul ATARI Computer Enthusiasts



An independent computer user group

This Month's Meeting
FRIDAY, FEBRUARY 14, 1986

Todd Burkey will demo the programs he wrote and sells for the 8-bit Atari. (You may have seen these at the SPACE meetings before, if you have been a member for two or more years and never missed a meeting.) The programs are:

1. Softbase - a fast loading data base that supports the printing of one-up labels.
2. Diskedit - a disk utility program
3. Cartdisk - a program that makes a disk backup of a cartridge program.
4. Ultracopy - allows for multiple copies of a single disk.

Bruce Haug...President 774-6226

Jim Schulz...Vice-Pres 537-5442

Frank Haug...Disk Lib. 774-6226

Bob Rhode....Editor 222-3593

Bob Siede....Treasurer 489-3982

Bob Floyd....Secretary 487-2627

Jim Siede....Paper/Educational Librarian 489-3982

SPACE/TAIG Bulletin Board...473-2897

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IN THIS ISSUE:

Chris Crawford's final Assembly Language lesson

Space's new ST special interest group

Plus, all the usual columns

BYTES FROM THE PRES

January '86 Meeting Minutes
by Bob Floyd

Well it's time for another meeting, and I am getting to know what's going on in the world of ATARI. I've had questions, and more questions to find the answer to. This month it has been printers; how do I make my printer work with Print Shop or ATARIwriter? Well, with Print Shop, read the box and make sure your printer is supported. If your printer DOES NOT print graphics, then Print Shop will be of little or no use to you. As far as Atariwriter goes, there are print drivers available for 99 different printers other than ATARI, see me at the meeting.

We have ordered, from JACS, their two Print Shop Graphic disks for our library. Since the Print Shop goes through ribbons quite quickly, it's lucky that our printer ribbon REINKER has arrived. Now all we need is someone to be in charge of it. We will determine who and the details at the Feb. meeting.

Come to the meeting and see our new COLOR MONITOR!! It looks great! For the money you can't buy better!

If you have suggestions for upcoming meetings, please write them down and give them to me with your name and phone number because I can't remember everything. I plan the meetings two weeks in advance; therefore, it is hard to make changes at the last minute, and still get everything covered that was scheduled at the meeting.

The Pres.

MAST-SIG-NEWS

There will be a MAST SIG meeting the 21st of Feb. MAST is the "Minn. Atari ST" SIG (Special Interest Group) of SPACE. The meeting is EVERY 3rd Fri. of the month, at 7:30 PM at our regular meeting place, Falcon Heights Community Center 2077 W. Larpentaur.

The only requirement to become a member of MAST is to join SPACE. MAST news will be covered in the regular SPACE Newsletter, this way there is one printing, one postage to pay, and everyone will get the latest ST NEWS delivered to their home. New information on the ST will still be covered at the regular SPACE meeting, but will be expanded and pulled apart at the MAST meeting the next Fri., one week later.

The extra cost of the meeting hall will be taken care of by the selling of 3 1/2" D.O.M.'s for the ST. The extra cost of the Newsletter will be covered by NEW ST OWNERS joining SPACE, and more ads in our newsletter. Remember the ads, support our local computer dealers.

By having one main computer club with a SIG on the NEW 520ST, everyone will be kept up-to-date on both the old and new ATARI, in the NEWSLETTER, and each meeting can cover their own unique problems. REMEMBER SAME PLACE, SAME TIME, ONE WEEK LATER FOR 520ST MAST MEETING.

The last SPACE meeting was held Friday, January 10. In "Rumors", Bruce Haug reported that there will be a 1040ST for \$1000.00 (includes monochrome monitor, double sided drive and built-in power supplies) to be sold at computer stores and a 260ST (or 520ST ?) with monitor & television output (low res only) for \$100 less than current 520ST systems & is to be sold by mass merchandisers. The computer can be purchased separately from the monitor or drive. An advertisement by JS&A for the ST was also mentioned, as well as a possible TV ad.

Jim Schulz related some further ST news such as the ST-TT 32 bit machine for approximately \$1000 with 1 megapixel resolution. He mentioned 6810 and 6820 microprocessor-based machines. The 20 megabyte hard drive and ROM's are due by February 1. ATARI will offer their own 1 meg upgrade for the 520ST.

Frank Haug discussed the disk of the month. Included were "Diamond" and current Federal tax templates for SynCalc. Bob Siede reported a bank balance of \$1103.04. Bruce mentioned the XE upgrades for SynCalc and SynFile+ are now available.

The BBS was down due to the Percom drive needing repair. Dick Johnson said that the Percom "slave drive" from the BBS is available for purchase. He would like to buy two 1050 drives for the BBS.

In old business, purchase of a second TV or monitor was discussed. A motion was seconded and passed to purchase a new monitor. A Zenith color monitor from COMB is the most likely candidate. The ribbon re-inker has been shipped. An ST special interest group (sig) will be formed soon. (It was decided after the meeting to have this sig meet on the third Friday of the month starting with February - same time and location as normal SPACE meeting). There should be an announcement in the February newsletter.

The only new business was that Beginner's Group would meet after this meeting. There appeared to be little interest.

In "Problems/Serviceing", Steve Pauley of Mindtools said the 1 meg upgrade problems that User Friendly described at their recent STING ST meeting was in error. All that is needed is a few extra resistors to be compatible with the new ROM's.

In "Offers/Deals", it was reported that the 1020 plotter was available for \$20.00 by mail and that a few K-Marts had a few 900XL's for \$59 to \$69.

In "Demos", Larry Vandenplas showed "Typesetter" (XLent Software). It does what the title says using various fonts, sizes, etc. in vertical or horizontal layouts. Gordy from Wizard's Work showed Halley Patrol (ANTIC). It is an educational program about comet Halley. Todd Surkey of Mindtools demo'd Iorro, a game about the heroic swashbuckler.

*** CHRIS CRAWFORD ***

ASSEMBLY LANGUAGE COURSE

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LESSON EIGHT:

SOME ADVANCED TOPICS

We have covered all of the traditional material associated with 6502 assembly language programming. However, there remain a number of topics that should be addressed before we finish. They are not closely associated with each other, so I will take them in random order.

The first topic is perhaps the most difficult one for a beginning assembly-language programmer: Where do I begin? How do I put together an entire assembly language project?

The problem here is seldom a technical one. Most beginners are stopped by their own lack of goals rather than any lack of technical expertise. One does not just write an assembly language program because one knows assembly language -- that is putting the cart before the horse. One starts with goals and then considers means.

A story from my early days with micros will illustrate this point. I did not have anybody to teach me assembly language. I decided in 1976 that I wanted to do wargames on computers. Accordingly, I bought a KIM-1, an early 6502-based single-board computer. I received it in January 1977. I studied the manuals and taught myself 6502 machine language. I had my first wargame up and running in six weeks. That means that I not only taught myself 6502 in six weeks, but I wrote and debugged a program at the same time.

Now, the point of this story is NOT "Wow, isn't Chris Crawford the smartest programmer who ever lived!" The point of this story is that goal-oriented learning is far more effective than goal-less learning. Had I sat in on some technical course on 6502, I would have taken months and months to learn the material. Because I had a clear goal, I learned very quickly.

My advice to you, the beginning assembly programmer, is this: You have acquainted yourself with the rudiments of 6502 programming. If you have some project you would like to pursue, some goal you would like to achieve, then do it. If not, don't waste your time trying to use a tool for its own sake.

Assuming you pass this first test, there remains the broad problem of organizing your assembly language program. I suggest that you break your program up into six modules, each forming a separate source code file. These six modules

would be:

EQUATES file: this file defines all of the equates used by the program: the data areas, the page zero and page six usage, and perhaps some of the large graphics and screen structures.

DATA file: this file contains all of the static tables used by the program. This would include all the text messages that would be printed onto the screen, bitmaps of graphics images, graphics character set definitions, and so forth.

INITIALIZATION code: this file contains the routines that initialize the program when it first fires up. They set up the screen, clear out all the special graphics and sound registers, zero out all the arrays that need to be cleared, and do all the other legwork associated with clearing the decks for a program.

INTERRUPT code: this module contains the code associated with any interrupts used by your program. This would most commonly involve vertical blank interrupts and display list interrupts. Inasmuch as your interrupts should be well-separated from your other code, you might as well keep the code in a separate file.

MAINLINE code. This includes the main program loop that controls the primary behavior of the program. If you have problems imagining this, think of it as nothing more than a series of subroutine calls arranged in a loop, with each subroutine handling one chunk of the overall process.

SUBROUTINE code: After a while you build up a collection of subroutines for handling standard processes in the program. Keep them here.

The second topic I would like to talk about is the place of the 6502 in the larger world of microprocessors. The 6502 is undoubtedly the most successful of microprocessors to date, having been installed in more systems than any other microprocessor. It is also a very old microprocessor, having first appeared in 1976. That makes it nine years old.

A very simple way to approach the world of microprocessors is to group them into two sets -- the Sixes and the Eights. The Eights represent the earliest group of microprocessors, they trace their lineage all the way back to the 4004, the first microprocessor. The 4004 was followed by the 8008, the first eight-bit microprocessor. The 8008 was superseded by the 8080, which was in turn followed by the Z-80. The Z-80 was the most advanced eight-bit processor in the Eights line. The next step was

to go to 16 bits with the 8088 and 8086. These were followed by the more powerful 80186, 80286, and 80386.

The fundamental philosophy of all the Eights can be expressed in two words: features and compatibility. The designers of the Eights were always adding new features to the microprocessors with each successive generation. The goal seemed to be to pack as many bells and whistles in as would fit. The second goal, compatibility, meant compatibility with the previous microprocessor in the series. This insured that software developed for previous versions would still run on the newer versions.

The result of this design philosophy was a series of powerful microprocessors that were quite complex in layout and rather difficult to learn. The features were piled up on each other in a bewildering array. Once you learn the system, it seems natural enough. But it is something of a mess.

The Sixes include the 6800, the 6502, the 6809, and the 68000. The two key words guiding the design of the Sixes are cleanliness and speed. The idea was to make the instruction sets clean, powerful, and fast. The hope was that the processors would be so easy to learn that compatibility would not be a problem. The design approach was to use just a few simple instructions, but give them variations that greatly extend their power. Thus, the 6502 has a LDA instruction that can be used with a great many addressing modes.

The 68000 is the 32-bit entry into the Sixes line. It carries the idea of cleanliness even further than the 6502. The 68000 uses a single instruction with different modes to replace the 6502 instructions LDA, LDX, LDV, STA, STX, STY, TXA, TAX, TYA, PHA and PLA. That's quite a simplification!

The 68000 also boasts sixteen registers, each 32 bits wide. That's a total of 512 bits of register space, the 6502 has 32 bits of equivalent register space. Those sixteen registers eliminate many of the data-shuffling problems so common with the 6502.

The 68000 has a linear address space 24 bits wide -- that's sixteen megabytes! Thus, a 68000 can directly address 16 megabytes of RAM and ROM. The 6502, by contrast, can only address 64K directly -- it must use paging systems that slow it down to address more memory.

Finally, the 68000 has a number of advanced capabilities that make possible a number of special capabilities. I will describe just one stack frames. The 68000 makes it easy to set up a local, temporary stack when you enter a subroutine. Thus, subroutines can have their own local

variables stored on the stack, accessed via a special stack pointer register. The 68000 will manage all the housekeeping necessary to keep such a system straight.

Did I mention that 68000 has hardware multiply/divide?

THE END

D.O.M. Stuff
By: Frank Haug

ATTENTION!!! If you own one of the following programs: Electronic Art's Pinball Constr. Set, Koala/Atari touch tablet (or light pen), MovieMaker, Paint, or AMS; PLEASE SEE ME AT THE MEETING. I would appreciate your help in trying to put together extra disks that could be sold to members and traded to other clubs. In our club's tradings I've seen the pictures, movies and songs, that they put out, and I know that we can do better -- or at least as good as they did. This is the last time I am going to ask you to help. After this it drops, and if the programs we get in trade for ours start to look like 1982 rejects, you'll know why.

Besides the DOM, we will be selling another picture disk containing more Micro Illustrator pictures with an AUTORUN on both sides.

Now on with the programs on the February 1986 DOM.

1. MINNCALC.SC - The state tax template for Syncalc.
2. GAMBLER - An integrated variety of games of chance.
3. WDPUZGEN - Word find puzzle generator, creates a key and puzzle of user defined words.
4. DEFENSE - A defender clone.
5. APPLKILL.BAS - A final record of a former competitor.
6. MINIGOLF - A challenging game of miniature golf.

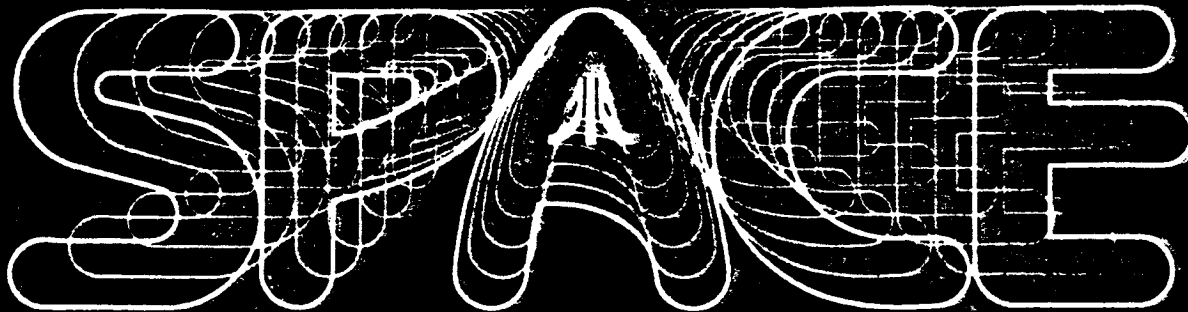
ATTENTION

To the member who has the Disk Library on SYNFILE, please see Frank Haug about same.

MAST-SIG DISK

Jim Schulz is compiling a 3.5 inch disk for the MAST-SIG meeting, but has not yet chosen all the programs for the disk from the many ST programs available.

Saint Paul ATARI Computer Enthusiasts



An independent computer user group

SPACE is an independent user interest group of owners of ATARI Home Computers. It has been organized by local owners of ATARI computers for the purpose of mutual self assistance and sharing of information. It is open to all interested computer enthusiasts.

The group has recently changed meeting time and location to accomodate the recent influx of new members. SPACE now meets on the second Friday of each month at the Falcon Heights Community Center, 2077 West Larpentour, at 7:30 pm. Meeting time and location can be confirmed by calling one of the officers listed below.

MAST is a SIG (Special Interest Group) of SPACE, and is intended for the owners of the new ATARI 520ST, information on other ATARI computers is not discussed at MAST meetings. There is no additional membership fee to become a member of MAST. The MAST NEWSLETTER is part of the regular SPACE Newsletter and is mailed to your home each month before the meeting date. MAST meets the third Friday of the month at the same above location and time.

Benefits of membership include software demonstrations, group purchases at substantial discounts, group projects, public domain disk of the month software at very low prices, book library, new educational software library with over 20 programs, personal contacts / learning, greater information/awareness on the world of ATARI, software at discounted prices from dealers at meetings, Question & Answer Session, etc. Come to a meeting to find out more.

-----FOR MORE INFORMATION, CONTACT A CLUB OFFICER-----

Bruce Haug...President___774-6226 Bob Floyd....Secretary__487-2627 Bob Rhode....Editor_____222-3593
Jim shulz....Vice-Pres___537-5442 Bob Siede....Treasurer__489-3982 Frank haug...Disk Lib___774-6226
Jim Siede...Paper/Educational Librarian__489-3982
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Equipment/System-Used_____

Areas of Interest_____

CHECK ONE or BOTH: SPACE____ MAST____

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